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IS 11845-3 (1994): Fluid logic circuits for fluid power systems, Part 3: Symbols for logic sequences and related functions [PGD 16: Fluid Power]

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IS 11845 (Part 3) : 1994
ISO 5784-3 : 1989

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तरल पावर तंत्रों के लिए तरल तर्क परिपथ

भाग 3 तर्क अनुक्रम और संबंधित कार्यों के लिए प्रतीक

Indian Standard

FLUID LOGIC CIRCUITS FOR FLUID POWER SYSTEMS

PART 3 SYMBOLS FOR LOGIC SEQUENCERS AND RELATED FUNCTIONS

[ISO Title : Fluid power systems and components — Fluid logic circuits —
Part 3 : Symbols for logic sequencers and related functions]

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NATIONAL FOREWORD

This Indian Standard which is identical with ISO 5784-3:1989 'Fluid power systems and components — Fluid logic circuits — Part 3: Symbols for logic sequencers and related functions' issued by the International Organization for Standardization (ISO), was adopted by the Bureau of Indian Standards on the recommendations of the Basic Fluid Power Sectional Committee and approval of the Production Engineering Division Council.

IS 11845 was first published in 1986 based on ISO/DIS 5784/1. This International Standard has been finalized as ISO Standard in the following three parts:

ISO 5784/1 : 1988	Fluid power systems and components — Fluid logic circuits — Part 1 : Symbols for binary logic and related functions
ISO 5784/2 : 1989	Fluid power systems and components — Fluid logic circuits — Part 2 : Symbols for supply and exhausts as related to logic symbols
ISO 5784/3 : 1988	Fluid power systems and components — Fluid logic circuits — Part 3 : Symbols for logic sequencers and related functions

To align with the international practices, the Sectional Committee, PE 14 has decided to revise IS 11845 : 1986 by adopting the above ISO standards as dual number standards in the following three parts:

IS 11845 (Part 1) : 1994/ ISO 5784-1 : 1988	Fluid logic circuits for fluid power systems : Part 1 Symbols for binary logic and related functions (<i>first revision</i>)
IS 11845 (Part 2) : 1994/ ISO 5784-2 : 1988	Fluid logic circuits for fluid power systems : Part 2 Symbols for supply and exhausts as related to logic symbols (<i>first revision</i>)
IS 11845 (Part 3) : 1994/ ISO 5784-3 : 1988	Fluid logic circuits for fluid power systems : Part 3 Symbols for logic sequencers and related functions (<i>first revision</i>)

The text of the ISO standard has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- Comma (,) has been used as a decimal marker in the International Standard while in Indian Standards, the current practice is to use point (.) as the decimal marker.
- Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

In the adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standards</i>	<i>Degree of Equivalence</i>
ISO 1219:1976	IS 7513:1974 Graphical symbols for fluid power systems	Technically equivalent
ISO 5784-1:1988	IS 11845 (Part 1) : 1994 Fluid logic circuits for fluid power systems : Part 1 Symbols for binary logic and related functions	Identical
ISO 5784-2:1989	IS 11845 (Part 2) : 1994 Fluid logic circuits for fluid power systems : Part 2 Symbols for supply and exhausts as related to logic symbols	Identical
ISO 5598:1985	IS 10416:1992 Fluid power systems and components — Vocabulary	Identical

The concerned technical committee has reviewed the provision of ISO 6358:1989 Pneumatic fluid power — Components using compressible fluids — Determination of flow-rate characteristics referred in this adopted standard to use in conjunction with this standard.

Indian Standard

FLUID LOGIC CIRCUITS FOR FLUID POWER SYSTEMS

PART 3 SYMBOLS FOR LOGIC SEQUENCERS AND RELATED FUNCTIONS

1 Scope

This part of ISO 5784 defines graphical symbols for sequencers (step-by-step functions) and related functions and gives some rules concerning their use in circuit diagrams.

Symbols given in this part of ISO 5784 shall be used for all documents and circuit diagrams concerning sequencers and related functions for data processing, especially in fluid logic circuits.

This part of ISO 5784 may be used in conjunction with ISO 5784-1 and ISO 5784-2.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 5784. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 5784 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1219 : 1975, *Fluid power systems and components — Graphic symbols*.

ISO 5598 : 1985, *Fluid power systems and components — Vocabulary*.

ISO 5784-1 : 1988, *Fluid power systems and components — Fluid logic circuits — Part 1: Symbols for binary logic and related functions*.

ISO 5784-2 : ¹⁾, *Fluid power systems and components — Fluid logic circuits — Part 2: Symbols for supply and exhausts as related to logic symbols*.

ISO 6358 : 1989, *Pneumatic fluid power — Components using compressible fluids — Determination of flow-rate characteristics*.

3 Definitions

For the purposes of this part of ISO 5784, the definitions given in ISO 5598 apply.

4 General

The two values of a binary variable characterizing logic states are represented by two arbitrarily chosen symbols. It has become usual practice to use the symbols 0 and 1 for this purpose.

As sequence functions are used more and more, it has become necessary to use standardized symbols.

It is also necessary at the same time to state some pneumatic and electric vocabulary in the area of sequencers (see ISO 6358).

This part of ISO 5784 specifies two types of symbols for sequence function modules:

- 1) Type "input → output", or "in/out", where the input signal "IN" implies an output "OUT" of module n (see annex A).
- 2) Type "step → return" or "step/return", where the step S_n (output n) implies output S_{n+1} of the following module, $n+1$ (see annex B).

5 Composition of the symbols and rules for their use

5.1 General rules

The rules specified in 5.2 and 5.3 are applicable to all the symbols presented in this part of ISO 5784.

This part of ISO 5784 gives the most currently used sequencer functions and also shows how to apply the rules of symbol

1) To be published.

development, taking into account that these rules also allow the development of other symbols.

NOTE — The examples in this International Standard make use of the letters or numbers $X, Y, Z, S \dots n - 1, n, n + 1, a, b, c \dots$ (outside the symbol) to explain functions. This practice is used for convenience only and should not be taken as part of the requirements specified in this part of ISO 5784.

5.2 Composition of symbols

Rules concerning the composition of symbols are given in ISO 5784-1 and ISO 5784-2.

5.3 Signal flow and sequence evolution

The complete symbol for a sequencer is a rectangle.

In principle, the direction of

- evolution of sequences from 1 to n ,
- flow of main signals: input, output or step, return signals,
- flow of input/output signals of end modules,

shall comply with the rules given in 5.3.1 and 5.3.2.

5.3.1 General shape of sequencer in vertical form (see figure 1)

The step evolution shall be from top to bottom.

The main signals (step signals) shall be from left to right.

The end module signals shall be in any direction of either side of the symbol. (See detailed symbols in clauses 6 and 7.)

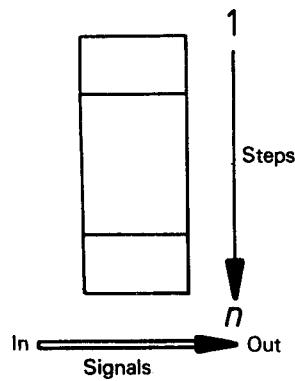


Figure 1

5.3.2 General shape of sequencer in horizontal form (see figure 2)

The step evolution shall be from left to right.

The main signals (input/output step signals) shall be from bottom to top.

The end module signals shall be in any direction on either side of the symbol. (See detailed symbols in clauses 6 and 7.)

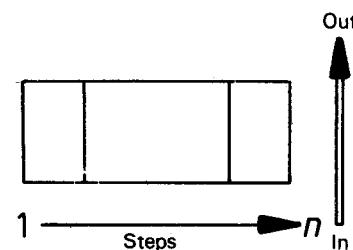


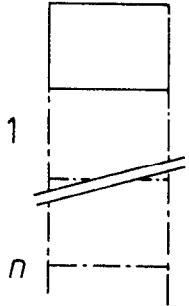
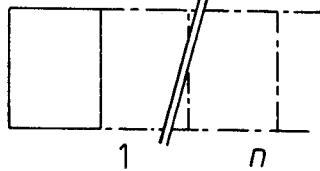
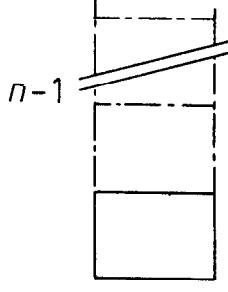
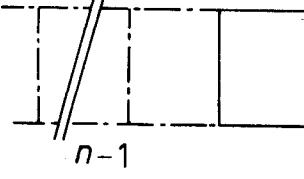
Figure 2

5.3.3 Other cases

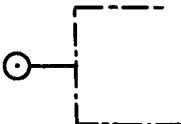
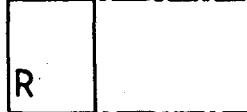
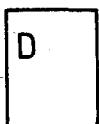
If the rules given in 5.3.1 and 5.3.2 are not applicable, see 5.6 in ISO 5784-1 : 1988.

6 Symbols for end module functions

6.1 General symbols

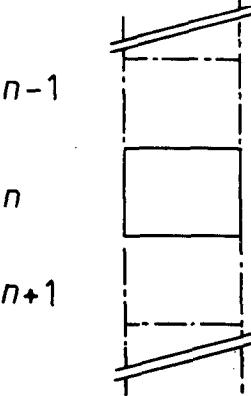
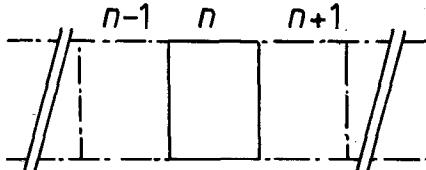
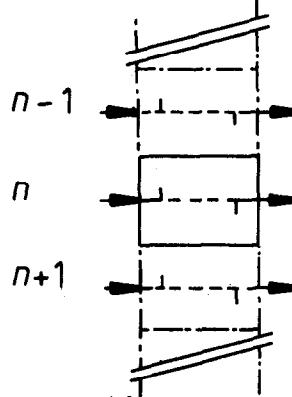
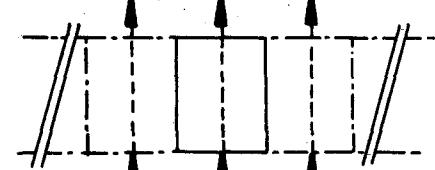
Code number	Graphical symbol	Description
6100-05/3		General symbol for input module
6100-06/3		
6100-10/3		General symbol for output module
6100-11/3		

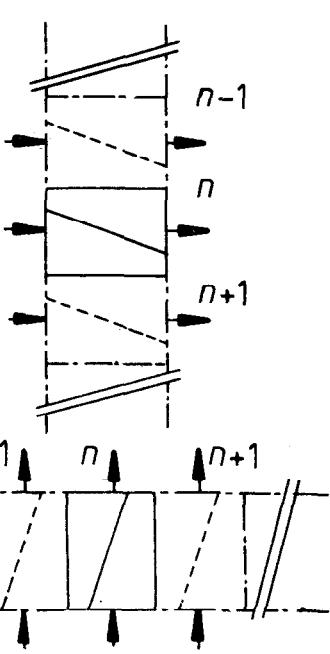
6.2 Input and output modules — Basic symbols for ports functions

Code number	Graphical symbol	Description
6200-05/5		Supply (see ISO 1219)
6200-10/3		Input port symbol on end module
6200-15/3		Output port symbol on end module
6200-20/3		Symbol for reset port
6200-25/3		Symbol for activation port
6200-30/3		Symbol for deactivation port

7 Symbols for step module functions

7.1 General symbols

Code number	Graphical symbol	Description
7100-05/3		General symbol for step module function
7100-06/3		
7100-10/3		General symbol for type "in/out" (1/0) step module function (input-output)
7100-11/3		See examples in annex A.

Code number	Graphical symbol	Description
7100-15/3		<p>General symbol for type "SR" (step/return) step module function (output-return)</p> <p>See examples in annex B.</p>
7100-16/3		

7.2 Particular symbols for step modules

Code number	Graphical symbol Type "SR" module	Graphical symbol Type "in/out" module	Description
7200-05/3			Step module function which de-activates only the preceding module
7200-06/3			
7200-10/3			Step module function which de-activates all preceding modules
7200-11/3			

7.3 Basic complementary symbols for step modules

For the basic complementary symbols, see 8.1.3 in ISO 5784-1 : 1988.

Annex A

(informative)

General symbol for type “in/out” (input-output) step module function

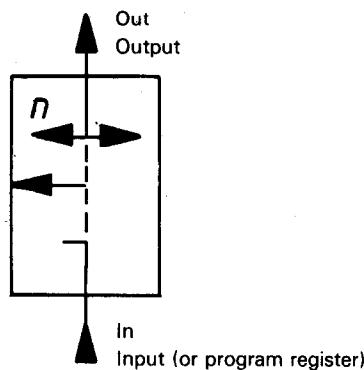
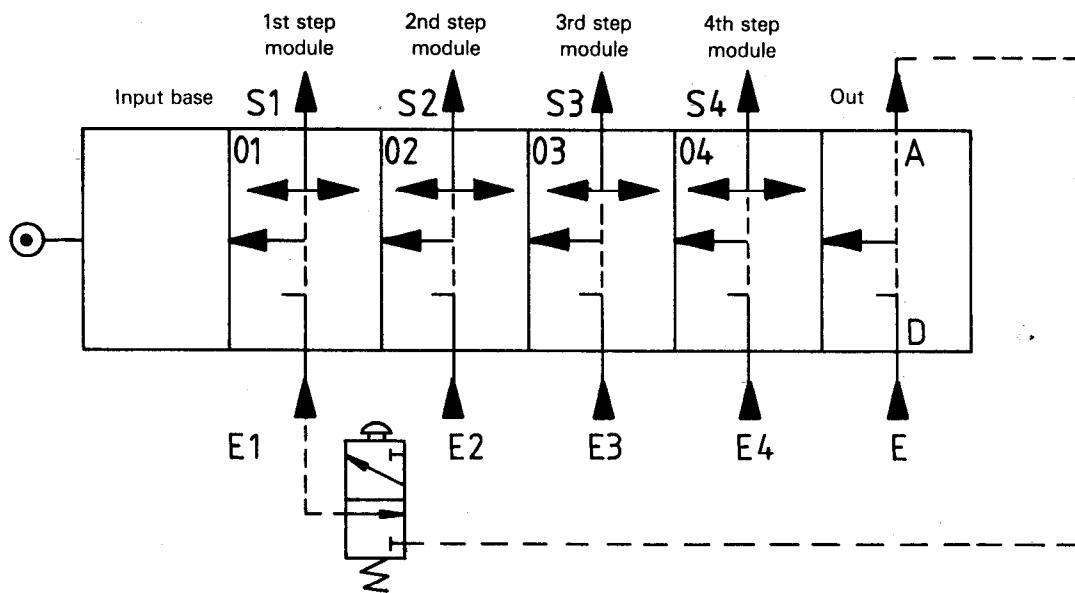


Figure A.1 – Register program – Type “in/out”



Alternative

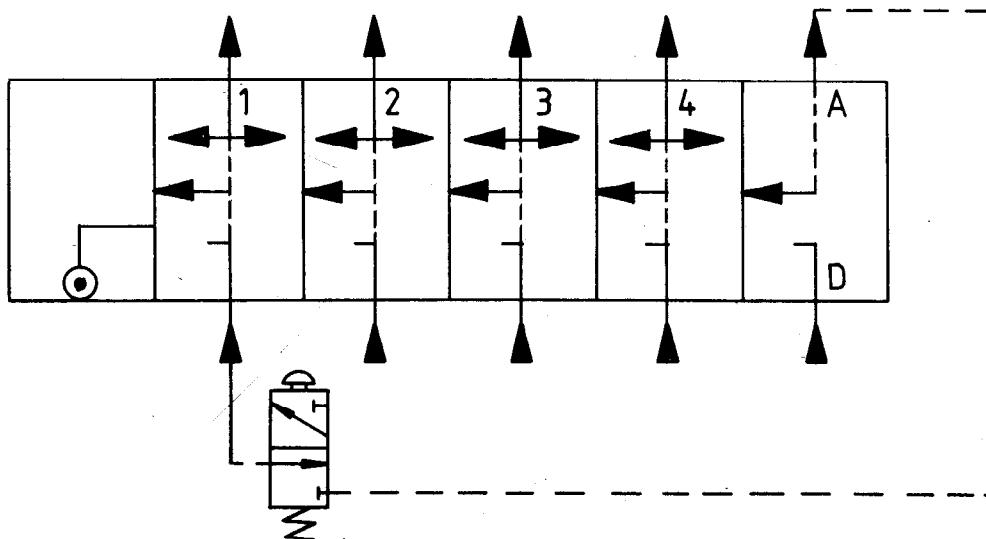


Figure A.2 — Examples — Type “in/out”

Annex B (informative)

General symbol for type "SR" (step/return) step module function

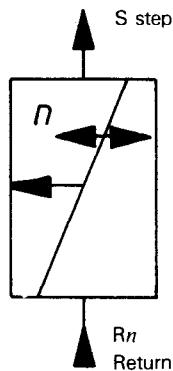
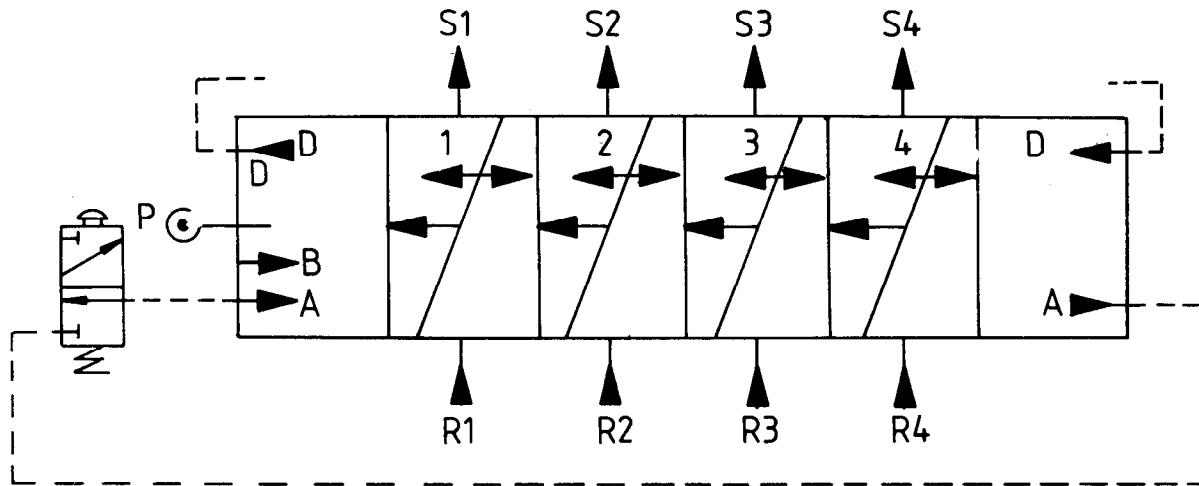


Figure B.1 — Register program — Type "SR"



Alternative

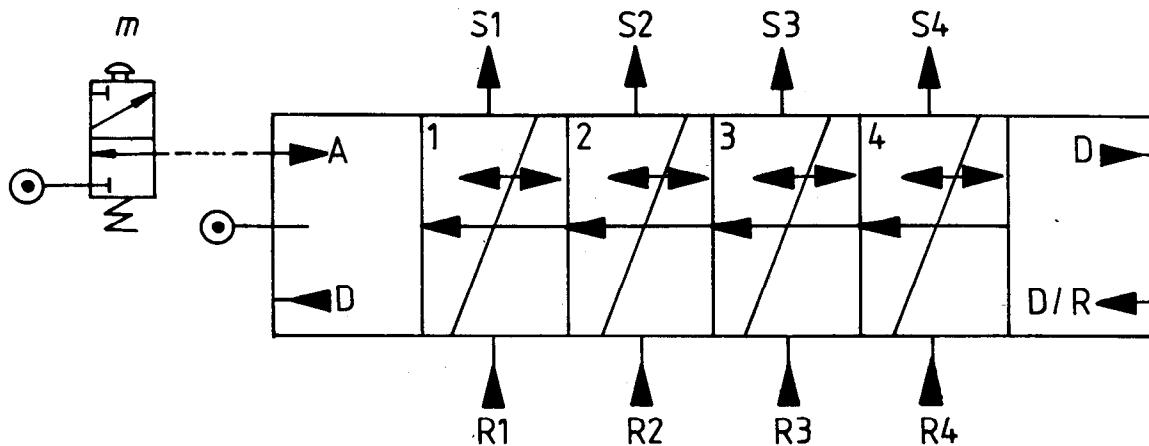


Figure B.2 — Examples — Type "SR"

Annex C
(informative)

Bibliography

IEC 617-12 : 1983, *Graphical symbols for diagrams — Part 12: Binary logic elements.*

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